

3.4 INFRASTRUCTURE: TRANSPORTATION, TECHNOLOGY, UTILITIES

BACKGROUND

Transportation

Roanoke's transportation system is a network of local and regional roads, freight rail (east-west, north-south), airport, transit, and an evolving system of greenways and bikeways. The major interstate and regional routes are I-81, I-581, U.S. 220/Roy L. Webber Expressway, U.S. 460, and U.S. 11. Norfolk Southern provides freight rail service. Passenger and freight air service are provided through the Roanoke Regional Airport. Valley Metro provides bus transit and paratransit service.

The City, with cooperation and funding from the Virginia Department of Transportation (VDOT), is responsible for planning and maintaining its roads, greenways, bikeways, and other transportation facilities. Roanoke participates in a regional Metropolitan Planning Organization (MPO). The MPO develops the long-range transportation plan, regional greenway plan, regional bikeway plan, transportation improvement program, and other transportation plans.

Road System



The road system is an interconnected grid providing easy access via multiple routes throughout Roanoke. However, in outlying areas in southwest and northwest that developed after World War II, the street system is more suburban in character with cul-de-sac streets. The conventional suburban road pattern requires longer drives and concentrates traffic on fewer, larger roads.

Several major road projects were completed in the 1990s.

- Peters Creek Road was extended from Melrose Avenue to Brandon Avenue.
- The Valley View Interchange on I-581 provided easier access to Valley View Mall and surrounding commercial development.
- The Gainsboro Road project linked 2nd Street in downtown with Orange Avenue near I-581.
- Removal of the Hunter Viaduct in downtown was completed.
- Fifth Street - between Norfolk Avenue and Gilmer Avenue - was improved.

However, some improvements have not contributed to sustainable forms of development. Design guidelines are needed to address this issue. As shown on Map 3.4.1, several projects have been identified as priorities for further study:

- A new interchange from the Roy L. Webber Expressway to Reserve Avenue/Jefferson Street to provide access to the Riverside Centre for Research and Technology.
- Reconfiguration of the Elm Avenue/I-581 interchange.
- Tenth Street, N.W., safety improvements from Gilmer Avenue to Williamson Road (consideration may be given to extending the improvements southward to the Wasena Bridge area).

- Thirteenth Street, S.E., widening from Jamison Avenue north to Hollins Road, with construction of a bridge over the railway tracks.
- Wonju Street, S.W., extension from Colonial Avenue to Brandon Avenue.

VDOT has studied alternative routes for a new Interstate 73, to be routed from the Virginia-North Carolina border, and made its recommendations to the Commonwealth Transportation Board (CTB). The CTB chose the route that goes through the City and eastward. The location of I-73 will have significant effects on the City and the Valley depending on the corridor selected for construction. Additional land use planning, urban design of the road and adjacent intersections, and mitigation of environmental impacts will be important considerations in the near future.

Pedestrian Systems

Roanoke encourages sidewalks within the City. Sidewalks are considered important assets for residential neighborhoods in that they enhance the quality of life, in addition to providing safe access for pedestrians. The City funds sidewalks annually, but funds have been limited and there have been more requests for repairs, replacement, and new sidewalks than available funds can provide.

Greenways

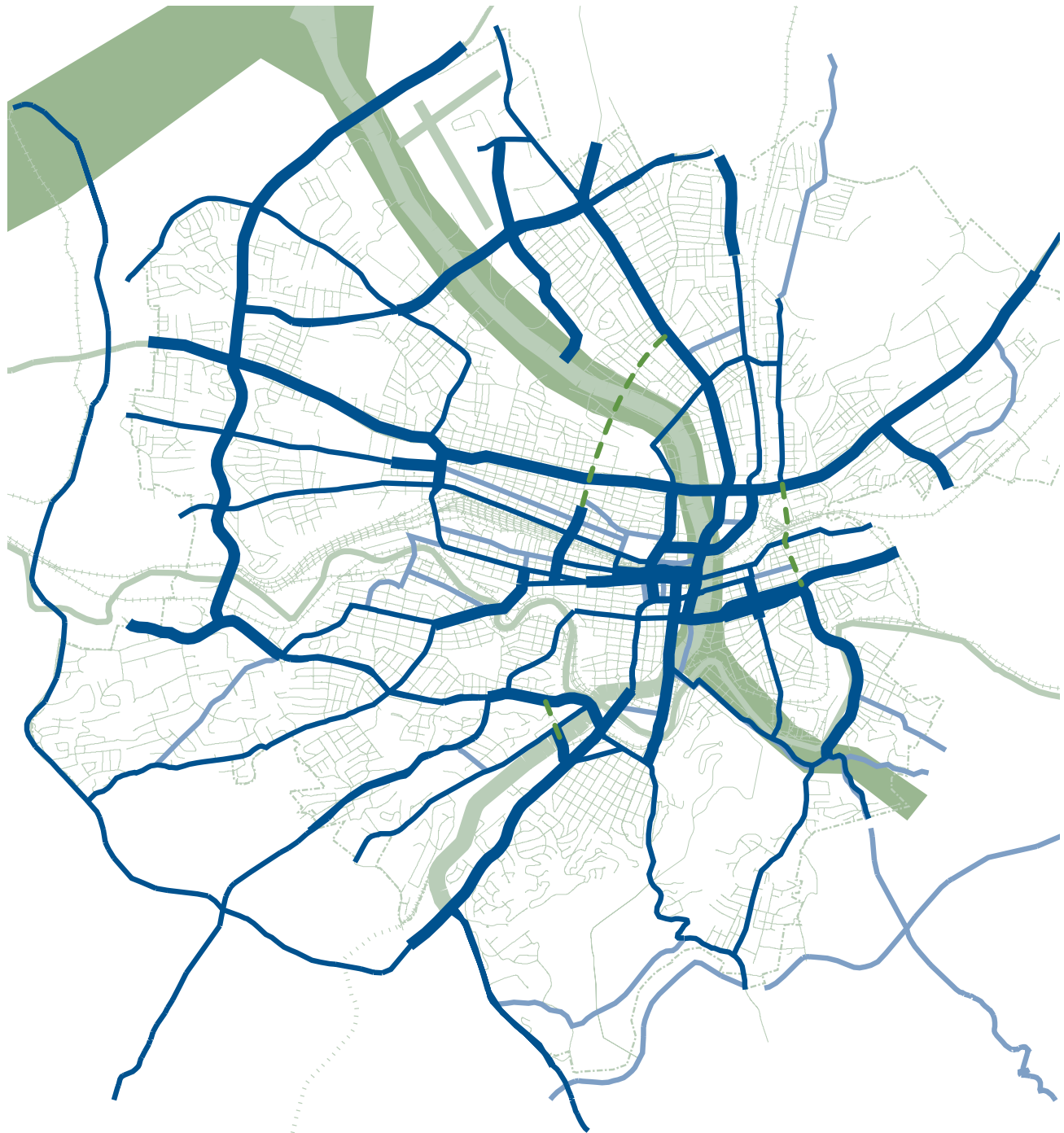
Greenways are corridors of protected open space that are managed for recreation, conservation, and non-motorized transportation. Many of the proposed greenways include recreational-use trails. Greenway planning is done in accordance with an adopted *Roanoke Valley Conceptual Greenways Plan*. Current projects under construction or funded for construction are Lick Run, Mill Mountain, Murray Run, Tinker Creek, and Roanoke River Greenways. Bikeways are also planned on the regional level; the Roanoke Valley-Alleghany Regional Commission coordinates and updates the bikeway plan for the Roanoke Valley. The location of current and proposed greenways and bikeways is shown on Map 3.4.2.

Transit System

The Greater Roanoke Transit Company, Inc., operates Valley Metro, which provides local bus transit service. Routes are based on demand and generally serve major employment centers, commercial destinations, and neighborhoods in Roanoke. Some routes extend into Roanoke County, Salem, and Vinton. Campbell Court Transportation Center in downtown is the central hub of the system. The Downtown Express, a pilot program providing shuttle service between Civic Center parking and downtown, began in 2000. The RADAR program provides public transportation for citizens with special needs. The transit system is shown on Map 3.4.3.

Airport and Air Service

Roanoke Regional Airport provides full-service passenger and freight air service and is the primary airport serving southwestern Virginia. The airport has approximately 90 scheduled passenger flight arrivals and departures per day, accessing twelve major cities with nonstop service. A five-member commission that includes representatives of the City and Roanoke County governs the airport's operations. The airport has made major improvements in recent years to ensure its competitiveness, such as a new terminal and runway extension. A new tower is planned along with other improvements. Project Nexus is a regional project to increase the airport's competitiveness by promoting low-fare, daily express service between Roanoke Regional Airport and Dulles International Airport.



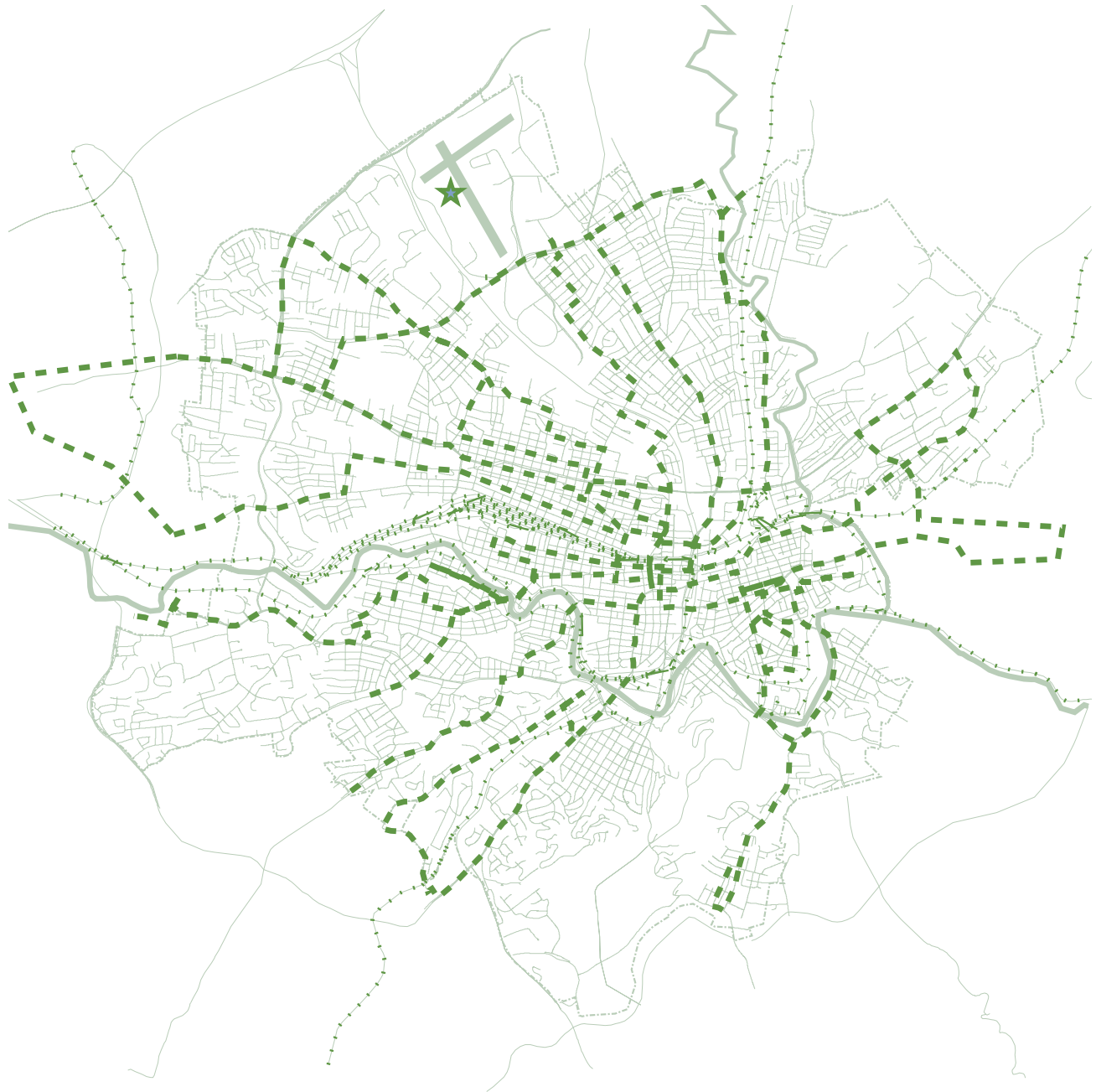
3.4.1 Transportation System

- Highway
- Arterial Road
- Collector Road
- Local Access Road
- I-73 Corridor (State Recommended)
- Recommended Road Projects
(2000-2002 Transportation Improvement Program)



3.4.2 Greenways and Bikeways

- Greenway/Bikeway
- Bikeway Only



3.4.3 Transit, Rail, and Air

- - - - Transit Coverage
- + + + + Rail Line
- ★ Airport

Rail System

Norfolk Southern (formerly Norfolk and Western) Railway provides freight rail service. Once headquartered in Roanoke and the major employer for the region, Norfolk Southern still retains a major presence in the City, and Roanoke enjoys excellent connections to the national rail network. The railroad discontinued passenger service in the 1980s. An initiative is underway to develop the Old Dominion Express, which would provide passenger rail service from Bristol, through Roanoke and Richmond, to Washington, DC. This service would provide access to major North-South lines from New York to Florida.

Technology

As Roanoke makes the shift from an industrially-based economy to an information-based economy, the same investment in infrastructure that laid down railroad tracks and built highways must be made in technology infrastructure. Technology infrastructure is more than the physical infrastructure of a fiber-optic communications network. It includes buildings, workforce, local government policy, and intellectual infrastructure. Ready-to-occupy buildings and warehouses with historic character and flexible leases known as "Heritage Space," coupled with a highly trained workforce and innovative tax structure and incentives, are all critical elements to attracting knowledge-based industries to technology districts.

Utilities

Private corporations provide electric power (American Electric Power), local telephone (Verizon) and natural gas (Roanoke Gas) utilities, with operations, rates, and services regulated by the State Corporation Commission. Cox Communications provides cable television through a franchise agreement granted by the City. Five companies provide fiber-optic and other telecommunications infrastructure. Water and sewer service are provided by the City.

The City has three major sources of water supply: Carvins Cove Reservoir, Crystal Spring, and Falling Creek Reservoir. Carvins Cove provides approximately two-thirds of the water supply. All are good sources of high-quality water requiring very little treatment. In 1994, Roanoke completed a project that linked the three water sources. In 1999, the City increased connections to the County water supply system to improve reliability. Water distribution lines cover nearly the entire City, and utility extensions are done on an as-needed basis, usually for new infill development.

Wastewater treatment is provided at a regional treatment plant located in the City of Roanoke. The plant and the Roanoke River Sewer Interceptor line have been upgraded recently. As with water lines, sewer lines cover nearly the entire City, and extensions are generally made on an as-needed basis. Maintenance of the existing lines and reducing rainwater infiltration have been the primary focus for the City. In some of the City's older neighborhoods, sewer lines are experiencing deterioration because of the age of the clay pipes. In other areas, rain gutters and floor drains empty directly into the sewer system instead of the storm drainage system. The infiltration and inflow of rainwater in the sewer system can cause temporary overloads, placing additional stress on the wastewater treatment plant.

STRATEGIC INITIATIVE



Improving Streetscapes: Good street design supports multiple modes of transportation and adds value to the adjoining properties. It is essential to the continuing revitalization of downtown, neighborhoods, and commercial areas. A street-design manual will address the design of new and existing streets and will provide guidance for planning and implementing

improvements to create "Great Streets." Roanoke's streetscapes should be welcoming and attractive multi-modal linkages that carry vehicle traffic, pedestrians, and bicycles safely and efficiently to and from their destinations. Recognizing the importance of creating an urban network of streets within the City, guidelines for street design will be based on a street classification system that balances the purpose of the roadway with the impacts on the surrounding areas.

POLICY APPROACH

Transportation

Roanoke's transportation system should be an integrated and user-friendly network of well-designed streets that support auto, transit, pedestrian, and bicycle traffic. One of Roanoke's characteristics in the region is that it is an urban community with a compact development pattern and effective street grid. The street grid should be preserved, and new development should tie into the existing road network, completing the street grid where possible. Greenways and bikeways should be linked as both transportation and recreational opportunities. Bicycle facilities and pedestrian improvements should be considered a fundamental part of land use and transportation planning.

The public transit system is an important element of an urban transportation plan and should provide access to employment nodes, recreation, and cultural venues, as well as retail and commercial areas. As Roanoke becomes more economically diversified, the traditional pattern with downtown as the hub may need to be expanded to include east/west and north/south routes linked directly to employment or retail nodes.

At state and federal levels, studies are underway to provide an interstate transportation facility (I-73) in the existing I-581 corridor, passing through the City to the southeast. In the design and construction phases of proposed improvements, streetscape elements consistent with the streetscape and corridor design recommendations of the plan should be included to enhance the appearance and help mitigate negative impacts. Such streetscape elements may include extensive landscaping, installing sidewalks or trails linked to existing pedestrian facilities, providing decorative lighting, and unified signage. Special care should be taken to make new improvements compatible with existing neighborhoods and downtown, and improvements should protect adjacent areas from noise and unnecessary traffic.

Parking in residential areas typically is not an issue; however, areas where there are businesses or institutions have some parking conflicts that may require residential parking permits to limit the time of day or duration of non-residential parking. Neighborhood commercial, commercial, and multi-family residential parking standards should be in keeping with the projected impact, while seeking creative solutions such as shared parking capacity to limit the

amount of impervious surfaces. Where possible, parking should be located in the interior of the development or in the rear or on the side of buildings buffered from the roadway by landscaping. Access to parking by alleys can be an alternative to reduce the impact of cars entering and exiting lots on neighborhood streets.

Significant improvements have been made to the airport facilities and runways since 1985. The air terminal is an attractive gateway to the City and the region. Current estimates are that more than 80% of the passengers arriving at the airport are traveling to destinations outside of the metropolitan area, such as Blacksburg.

The addition of an airport shuttle that connects with major destinations such as shopping, hotels, downtown, and restaurants may encourage passengers to visit Roanoke as part of their overall travel plans. The Roanoke Regional Airport Commission has been successful in attracting air freight businesses to locate in the area. The development of freight handling businesses on Commission-owned land as part of the airport facility can increase the profitability of the operation. In response to concerns regarding the number of cost-competitive daily flights, the Fifth Planning District Regional Alliance and the City of Roanoke, along with localities in the region, have sponsored a pilot project, Project Nexus, to promote low-fare, daily express service from the Roanoke Regional Airport to Dulles International Airport. Similar links to other destinations rather than hub cities are needed. Projects such as this are important for economic development and tourism.

Technology Infrastructure

Roanoke's primary role in encouraging new technology and associated businesses is to provide access to public rights-of-way for telecommunications infrastructure. The City can take a proactive role by ensuring that any in-road utility improvements include the installation of conduit for future use by service providers. The current system should be mapped to identify areas where fiber optic cabling and/or conduit are available and buildings that have been renovated to provide access.

STRATEGIC INITIATIVE



Getting Wired: This initiative focuses on creating an environment for technology businesses by providing infrastructure, office space, workforce, and supportive government policies.

Technology companies seek flexible work spaces with short-term leases and access to high-speed communications. Software

businesses often prefer buildings and warehouses with historic character, commonly known as "Heritage Space." Technology companies require an educated workforce with professional and technical skills. Their primary investment is frequently in the intellectual ability of their employees. Tax structures and economic development incentives should recognize the special needs of technology businesses. State legislation allows the establishment of technology zones where special incentives are available.

A fast, accessible, inexpensive, and reliable telecommunications system and a primary technology zone should be developed in the downtown, along with secondary technology zones in selected village centers. The future trend in telecommunications will include greater reliance on wireless technology, which will provide greater flexibility in location but is not expected to eliminate the requirements for wired connections that provide greater security.

Technology is also providing better access and communication between citizens and government. The idea of e-Government has been gradually developing in Roanoke and needs to be embraced as a medium for providing information to citizens and providing access to City government services.



Utilities

Increasing regional cooperation and agreements to develop additional water sources to meet current and future residential, commercial, and industrial needs are important to Roanoke and the Valley.

Replacement of water lines to ensure quality service, upgrades to sanitary sewer lines to eliminate inflow and infiltration of storm water, and creation of a regional utility to manage storm water are needed.

Water supplies for the region should be cooperatively managed and conservation practices implemented to

ensure a safe and sufficient supply of water for the future. Growth management of the region should be well planned and coordinated with future utility extensions.

POLICIES

- IN P1. **Regional transportation planning.** Roanoke will participate in regional transportation planning through the MPO to appropriately develop regional plans that support compact urban development, discourage sprawl, and emphasize multi-modal forms of transportation that prioritize facilities for bicycles, pedestrians, rail, and transit as well as accommodate automobiles. Cooperative planning on the local, regional, and state levels should include design features that maintain or improve connectivity of streets while maintaining neighborhood integrity and minimizing negative visual and noise impacts.
- IN P2. **Transportation system.** Roanoke will provide a transportation system that is an integrated, multi-modal network of automobile, bicycle, pedestrian, and transit facilities. Interconnected street systems should be encouraged in new development and be maintained in existing development. New roadways through existing urban areas should be designed to minimize impact on the City's urban fabric and complement Roanoke's neighborhoods.
- IN P3. **Land use and transportation plans.** Transportation and land use planning will be integrated to promote compact urban development and reduce the frequency and length of automobile trips. Bicycle facilities and pedestrian improvements will be a fundamental part of land use and transportation planning. Future commercial development along arterial roads will be focused at major intersections rather than strip commercial development along corridors.

- IN P4. **Parking.** Roanoke will encourage on-street parking wherever possible and discourage excessive surface parking lots. Maximum parking standards for development outside of downtown will be established. Off-street parking will be encouraged to the side or rear of buildings. Carpooling, park-&-ride lots, and transit will be encouraged to reduce parking demand. The City will continue to maintain structure parking downtown.
- IN P5. **Airport.** The City will participate in the Roanoke Regional Airport Commission to support continuous improvement in air service and passenger and freight facilities in order to maintain its position as the region's major airport. Land use adjacent to the airport should be reserved for commercial and industrial development related to air transportation or those businesses needing easy access to airport facilities. Airport-related uses will be encouraged in the areas near the airport. Residential land uses will be discouraged in the areas where noise exceeds recommended land use standards.
- IN P6. **Technology environment and infrastructure.** Roanoke will create an environment for electronic government and technology businesses through planning, development of favorable policies, and incentives for technology infrastructure. Roanoke will facilitate development of the capacity and coverage of fiber-optic, cable, and wireless communication networks. The visual impact of telecommunication facilities will be minimized by co-location and placement of towers in strategic locations.
- IN P7. **Water and sewer systems.** Roanoke's water and sewer systems will be maintained, upgraded, and extended to meet public needs in accordance with an adopted plan for utility improvements. Regional cooperation and agreements will be encouraged to provide the most efficient and effective utility services to citizens of Roanoke and the region. Conservation practices will be promoted and implemented. Roanoke will examine the potential for a regional storm water utility system where needed.

ACTIONS

Road System

- IN A1. Adopt standard design principles for streets and develop a manual to guide construction that affects the streetscape and includes attractive designs for traffic calming devices.
- IN A2. Develop an inventory of City streets based on transportation corridor classifications and identify priorities for design improvements.
- IN A3. Develop a transportation plan as a component of Vision 2001-2020 that uses the recommended design principles to implement and prioritize street improvements. Identify priorities for streetscape improvements through neighborhood plans and through a street design inventory.
- IN A4. Expand the urban forestry program to increase the number of street trees planted and replaced.

IN A5. Change zoning, subdivision, and other development ordinances to include revised street design principles.

IN A6. Coordinate with state and regional transportation agencies to include revised design standards for new and existing public roadways. Pursue public transportation links between the New River Valley and Roanoke.

Pedestrian, Greenway, and Bicycle Systems

IN A7. Develop a greenway system to provide pedestrian and bicycle linkages between the region's parks, rivers, creeks, natural areas, recreation areas, business centers, schools, and other institutions.

IN A8. Identify long-term funding for sidewalk construction.

IN A9. Develop procedures that link or expand greenways when obtaining rights-of-way when developing utilities.

IN A10. Develop and adopt a bicycle and pedestrian transportation plan that uses the recommended design principles.

Transit System

IN A11. Develop programs to increase the ridership of Valley Metro.

IN A12. Encourage employers to establish motor pools for work-related trips during the day so employees can walk or bike to work.

IN A13. Continue programs that provide public transportation to disabled citizens; consider expansion of service to employment and medical centers.

IN A14. Explore streetcars or other mass transit systems.

Airport

IN A15. Encourage expanded direct air service to major national destinations.

IN A16. Provide accessible shuttle service between the airport and other local destinations.

Rail System

IN A17. Encourage expansion of rail service to relieve truck congestion on Interstate 81.

IN A18. Explore development of a regional facility for a truck-to-rail intermodal transfer facility and inland port.

IN A19. Pursue passenger rail service.

Technology Infrastructure

IN A20. Create a task force responsible for developing a technology strategy.

IN A21. Inventory and map technology resources such as available buildings, communications infrastructure, and existing technology businesses.

IN A22. Foster strong partnerships and cooperative projects with Virginia Tech and other local universities.

Water and Wastewater

- IN A23. Promote regional solutions to public water and sewer needs and services, including consideration of water conservation strategies.
- IN A24. Maintain and upgrade sanitary sewer lines to eliminate infiltration and inflow of storm water.

3.5 PUBLIC SERVICES: POLICE, FIRE/EMS, SOLID WASTE MANAGEMENT, CODE ENFORCEMENT

BACKGROUND**Public Safety**

The Police Department operates out of centralized offices in the Municipal Building Annex in downtown Roanoke. The Department has approximately 250 budgeted positions for sworn personnel. Due to numerous vacancies in police personnel, additional emphasis has been placed on recruitment, improving benefits, and retention of existing officers. Police operations patrol 13 districts that are covered by 14 to 18 police cars 24 hours a day. A new police building is under construction and will relieve overcrowded conditions and provide additional space for new operations. Roanoke became one of only two localities in Virginia to be awarded the status of Certified Crime Prevention Community. The designation came out of a new program developed by the state Department of Criminal Justice Services.

The Police Department has adopted community oriented policing as a standard method of operation. This approach includes the Community Oriented Policing Effort (COPE) unit, a special police team that moves to specific sites to address particular problems. The COPE team works cooperatively with other departments to solve problems and can work from satellite offices in the community. Currently, COPE teams work from satellite sites located on Williamson Road and Lafayette Boulevard.

The Department has made a significant investment in time and financial resources in the Record Management System, which is a computerized system that enhances officers' ability to transmit and share information electronically. Mobile Data Terminals in vehicles are used to reduce paperwork, improve timeliness and accuracy of information, and reduce response time.

The Department is accredited by the Commission for Accreditation of Law Enforcement Agencies (CALEA). CALEA accreditation requires police departments to work regionally to achieve goals set out in standards. This cross-jurisdictional cooperation greatly enhances the ability of departments to respond to problems and provides training and education opportunities for personnel.

